

Claims

What is claimed is:

1. A system for streaming media comprising:
 - a stream routing processor configured to receive reservation data comprising a valid reservation identification and to transmit the valid reservation identification; and
 - 5 a stream caster configured to receive a reservation identification, to receive the reservation data identifying the valid reservation identification from the stream routing processor, to validate the reservation identification using the valid reservation data, and, if valid, to stream at least partially the requested media.
2. The system of claim 1 further comprising a plurality of stream casters configured to stream media from the system.
3. The system of claim 1 further comprising a switch controller configured to monitor a state of a system resource.
4. The system of claim 1 further comprising media storage configured to store the media.
5. The system of claim 1 further comprising a packet switch configured to transmit packets containing the media from the system.
6. The system of claim 5 wherein the packet switch comprises an internet protocol packet switch.

7. The system of claim 1 wherein the stream caster further is configured to transmit at least one information block comprising the reservation identification and at least one member of a group comprising a session initiation, a session termination, and a viewing event for a session.

8. The system of claim 7 wherein the session comprises at least one member of a group comprising an internet protocol session and a broadband connection.

9. The system of claim 1 wherein the stream routing processor further is configured to maintain a reservation state model comprising the reservation identification and at least one member of a group comprising a session initiation, a session termination, and a viewing event.

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10. A switch for streaming media comprising:

a stream routing processor configured to receive signaling inquiring if the switch can stream requested media, to determine if the switch is configured to stream the requested media, and, if so to receive reservation data comprising a valid reservation identification; and

a stream caster configured to receive a reservation identification, to receive from the stream routing processor the reservation data identifying the valid reservation identification, to validate the reservation identification using the valid reservation data, and, if validated, to stream at least partially the requested media.

11. The switch of claim 10 wherein the stream routing processor further is configured to monitor a state of the switch.

12. The switch of claim 11 wherein the state comprises at least one member of a group comprising available bandwidth, required bandwidth for the requested media, version compatibility, storage capacity, and operating mode.

13. The switch of claim 10 wherein the stream routing processor further is configured to monitor a status of a media server.

14. The switch of claim 10 wherein the stream routing processor further is configured to transmit signaling to a routing processor identifying that the switch can provide the requested media

15. The switch of claim 10 wherein the stream routing processor further is configured to record a state change in a state model for a session.

16. The switch of claim 15 wherein the state change comprises at least one member of a group comprising the requested media, a streamed media, the reservation identification, duration of media streamed, and a viewing event.

17. The switch of claim 10 wherein:

the stream caster comprises a first media server and a second media server;

the first media server is configured to stream a first portion of the requested media; and

the second media server is configured to stream a second portion of the requested media.

18 The switch of claim 17 wherein stream routing processor is configured to record a state change comprising an identification of the first media server streaming the first portion and the second media server streaming the second portion.

19. The switch of claim 10 wherein:

the switch comprises a second stream caster;

the stream caster is configured to stream a first portion of the requested media; and

the second stream caster is configured to stream a second portion of the requested media.

20 The switch of claim 19 wherein stream routing processor is configured to record a state change comprising an identification of the stream caster streaming the first portion and the second stream caster streaming the second portion.

21. The switch of claim 10 wherein the stream routing processor is configured to transmit signaling to, and receive signaling from, the stream caster to determine if the stream caster is configured to stream the requested media.

22. The switch of claim 21 wherein the stream routing processor determines that the stream caster is configured to stream the requested media and the stream routing processor is configured to transmit the reservation data to the stream caster and to transmit an acknowledgement to a routing processor.

23. The switch of claim 10 wherein the stream routing processor further is configured to transmit a message to the stream caster, to receive a response from the stream caster, and to process the response to determine if the stream caster is configured to stream the requested media.

24. The switch of claim 10 wherein the reservation data comprises a play list and the stream routing processor is configured to transmit the play list to the stream caster if the stream caster.

25. The switch of claim 10 wherein the switch is configured to communicate with a routing processor and wherein the stream routing processor is configured to transmit signaling to, and receive signaling from, the routing processor.

26. The switch of claim 10 wherein the stream routing processor is configured to communicate out-of-band to a broadband device.

27. The switch of claim 26 wherein the broadband device comprises a set top box.

28. The switch of claim 10 wherein the stream caster further is configured to accept a session upon receiving a valid reservation identification.

29. The switch of claim 28 wherein the stream caster is configured to process signaling received in the session to affect the media streaming.

30. The switch of claim 29 wherein the signaling comprises at least one member of a group comprising a setup, a teardown, a status message, and a viewing event.

31. The switch of claim 29 wherein the session comprises at least one member of a group comprising an internet protocol session and a broadband connection.

32. The switch of claim 10 wherein the stream caster is configured to report a state change to the stream routing processor.

33. The switch of claim 10 further comprising a switch controller configured to monitor a state of a switch resource.

34. The switch of claim 33 wherein the resource comprises a hardware component.

35. The switch of claim 33 wherein the switch controller is configured to report to the stream routing processor at least one member of a group comprising a service impacting event and a capacity impacting event.

36. The switch of claim 10 further comprising a media storage configured to store the media.

37. The switch of claim 10 further comprising a packet switch configured to transmit packets containing the media from the switch.

38. The switch of claim 37 wherein the packet switch is configured for multicasting of a live event or a simulated live event.

39. The switch of claim 10 further comprising a packet switch configured to transmit packets containing signaling within the switch.

40. The switch of claim 39 wherein the packet switch comprises an internet protocol packet switch.

41. The switch of claim 39 wherein the packet switch is configured to transmit and receive out-of-band signaling.

42. The switch of claim 10 wherein the reservation data comprises a play list.

43. The switch of claim 10 wherein the stream routing processor is configured to transmit and receive signaling in-band.

44. The switch of claim 10 wherein the stream routing processor is configured to transmit and receive signaling out-of-band.

45. A system for streaming media to a viewer comprising:
a stream caster configured to accept a session from the viewer to stream at
least partially the requested media upon receiving and validating a
reservation identification using a valid reservation identification; and
5 a stream routing processor configured to determine if the stream caster is
configured to stream the requested media, and, if so, to receive
reservation data comprising the valid reservation identification and
to transmit the valid reservation identification to the stream caster.

46. The system of claim 45 wherein the stream routing processor
comprises a switch load controller configured to communicate signaling to and from the
stream caster.

47. The system of claim 46 wherein the signaling comprises the
reservation data.

48. The system of claim 45 wherein the stream routing processor
comprises a switch load controller configured to communicate signaling to and from a
routing processor.

49. The system of claim 45 wherein the stream routing processor
comprises a switch load controller configured to communicate with a resource manager
to determine if the stream caster has a resource available to stream the requested media.

50. The system of claim 49 wherein the resource comprises at least one
member of a group comprising a media server, processing capacity, and bandwidth.

51. The system of claim 45 wherein the stream routing processor comprises a switch load controller configured to record a status of at least one event or at least one device in the system.

52. The system of claim 45 wherein the status comprises at least one member of a group comprising an active media stream, not to exceed capacity, and current capacity.

53. The system of claim 45 wherein the stream routing processor comprises a switch resource manager configured to monitor and to record status of resources in the system.

54. The system of claim 53 wherein the resources comprise at least one member of a group comprising a stream caster, a media player, bandwidth, current capacity, and not to exceed capacity.

55. The system of claim 45 wherein the stream routing processor comprises a viewer session control configured to maintain a reservation state model for each attempted reservation using the reservation identification.

56. The system of claim 45 wherein the stream routing processor comprises a viewer session control configured to maintain a reservation state model for a session and to receive from the stream caster and record each state change, wherein the state model identifies the session using the reservation identification.

57. The system of claim 56 wherein the state change comprises at least one member of a group comprising a setup, a teardown, and a viewing event.

58. The system of claim 45 wherein the stream routing processor comprises a viewer session control configured to create at least one information block for a session.

59. The system of claim 58 wherein the information block comprises the reservation identification, an identification of streamed media, a presentation identification, a media server, the stream caster, a media player, and a data packet path.

60. The system of claim 45 wherein the stream routing processor comprises a log data system configured to transmit log data from the system.

61. The system of claim 60 wherein the log data comprises at least one member of a group comprising an information block and a signaling log.

62. The system of claim 60 wherein the log data comprises at least one member of a group comprising a historical pull interface and a real time push interface.

63. The system of claim 45 wherein the stream caster comprises a signal wrapper subsystem configured to transmit session and state information to the stream routing processor and to receive and processes signaling from the stream routing processor.

64. The system of claim 45 wherein the stream caster comprises a signal wrapper subsystem configured to generate signaling logs and media server logs.

65. The system of claim 45 wherein the stream caster comprises a signal wrapper subsystem configured to receive and process signaling from the viewer and to transmit signaling and media to the viewer.

66. The system of claim 65 wherein the signal wrapper subsystem comprises a session controller configured to monitor and store session information and to transmit session information to the stream routing processor.

67. The system of claim 65 wherein the signal wrapper subsystem comprises a session controller configured to obtain status information from a media server.

68. The system of claim 65 wherein the signal wrapper subsystem comprises a session controller configured to transmit and receive signaling to and from the stream routing processor, including the valid reservation identification.

69. The system of claim 65 wherein the signal wrapper subsystem comprises a signal proxy configured to receive and process raw signaling from the viewer.

70. The system of claim 69 wherein the signal wrapper subsystem comprises a signal proxy configured to transmit the raw signaling for use by the stream processor to maintain a state model.

71. The system of claim 65 wherein the signal wrapper subsystem comprises a signal proxy configured to receive the reservation data, including the valid reservation identification, and to validate the reservation identification received from a viewer using the valid identification reservation.

72. The system of claim 65 wherein the signal wrapper subsystem comprises a signal proxy configured to accept or deny an attempted session based on validating the received reservation identification.

73. The system of claim 65 wherein the signal wrapper subsystem comprises a signal proxy configured to receive signaling for a session and to transmit the signaling to a media server.

74. The system of claim 73 wherein the signal proxy further is configured to transmit the signaling to another media server if the media server cannot stream the media.

75. The system of claim 65 wherein the signal wrapper subsystem comprises a stream proxy configured to bind a media server to a public internet protocol address.

76. The system of claim 65 wherein the signal wrapper subsystem comprises a stream proxy configured to transmit media streamed from a media server to the viewer.

77. The system of claim 76 wherein the stream proxy further is configured to transmit media streamed from another media server to the viewer if the media server is not able to stream the media.

78. The system of claim 65 wherein the signal wrapper subsystem comprises a stream proxy configured to receive signaling from the viewer and to transmit the signaling to a media server.

79. The system of claim 78 wherein the signaling comprises a status of the streaming media.

80. The system of claim 65 wherein the signal wrapper subsystem comprises a media server configured to stream media to the viewer.

81. The system of claim 80 wherein the media server further is configured to generate at least one media log comprising the reservation identification.

82. The system of claim 65 wherein the signal wrapper subsystem comprises a media log configured to store media logs generated by a media server.

83. The system of claim 65 wherein the signal wrapper subsystem comprises a data collector configured to collect raw signaling and to process the raw signaling to create at least one signaling log.

84. The system of claim 83 wherein data collector further is configured to transmit the signaling log to a log data system.

85. The system of claim 45 wherein the stream caster comprises log data system configured transmit from the system at least one member of a group comprising signaling logs and media logs.

86. The system of claim 85 wherein the log data system comprises a log data control configured to receive the signaling logs, to control transmitting the signaling logs from the system, and to control storage, if any, of the signaling logs.

87. The system of claim 85 wherein the log data system comprises a log storage configured to store the signaling logs.

88. The system of claim 85 wherein the log data system comprises a real-time push interface configured to transmit the signaling logs from the system in real time.

89. The system of claim 85 wherein the log data system comprises a historical pull interface configured receive a request for signaling logs and to transmit requested signaling logs.

90. The system of claim 85 wherein the log data system comprises a file transfer protocol interface configured to transmit a closed signaling log from the system.

91. The system of claim 45 further comprising a broadband service controller configured to monitor a broadband connection to determine if the broadband connection is active.

92. The system of claim 45 further comprising a broadband service controller configured to monitor a broadband connection to determine if the broadband connection has a quality of service problem.

93. The system of claim 45 further comprising a broadband service controller configured to record a state of the broadband connection.

94. The system of claim 93 wherein the broadband service controller comprises a circuit database configured to store a status of a broadband connection.

95. The system of claim 45 further comprising a human machine interface configured to enable human access to configure the system.

96. The system of claim 95 wherein the human machine interface comprises at least one member of a group comprising a web browser, a graphical based terminal session, and a command interface.

97. The system of claim 45 further comprising a network manager configured to monitor status of component in the system.

98. The system of claim 97 wherein the network manager comprises a stream caster controller configured to monitor and to report status of the stream caster.

99. The system of claim 97 wherein the network manager comprises an SRP controller configured to monitor and to report status of the stream routing processor.

100. The system of claim 97 wherein the network manager comprises a media storage controller configured to monitor and to report status of a media storage.

101. The system of claim 97 wherein the network manager comprises a signaling controller configured to monitor and to report status of a signaling component.

102. A switch for streaming media to a viewer comprising:

a stream caster configured to accept a session from the viewer to stream at least partially the requested media upon receiving and validating a reservation identification using a valid reservation identification;

5 a stream routing processor configured to determine if the stream caster is configured to stream the requested media, and, if so, to receive reservation data comprising the valid reservation identification and to transmit the valid reservation identification to the stream caster;

and

10 a switch controller configured to monitor the stream caster and to notify the stream routing processor of a status of the stream caster.

103. A switch for streaming media to a viewer comprising:
a streaming device comprising:
a media server configured to stream at least partially the requested
media for a session;
5 a signal proxy configured to accept the session based on validating a
reservation identification received from the viewer and to
communicate signaling between the viewer and the media
server if the session is accepted; and
a stream proxy configured to transmit media streamed from the media
10 server to the viewer.

104. The system of claim 103 wherein the signal proxy further is
configured to receive reservation data, including a valid reservation identification, and to
validate the reservation identification received from the viewer using the valid
identification reservation.

105. The system of claim 103 wherein the signal proxy further is
configured to transmit the signaling to another media server if the media server cannot
stream the media.

106. The system of claim 103 wherein the stream proxy further is
configured to transmit media streamed from another media server to the viewer if the
media server is not able to stream the media.

107. A method for streaming media from a switch comprising:
determining if a stream caster is configured to stream requested media;
receiving reservation data comprising a valid reservation identification at
the stream caster; and
5 accepting a session to stream at least partially the requested media upon
receiving and validating a reservation identification using the valid
reservation identification.

108. The method of claim 107 wherein the determining step comprises
transmitting a message to the stream caster inquiring if the stream caster is configured to
stream the requested media and receiving a another message from the stream caster at the
stream routing processor acknowledging the inquiry.

109. The method of claim 108 further comprising transmitting a third
message to a routing processor identifying the stream caster as being configured to
stream the requested media and identifying an address of the stream caster.

110. The method of claim 109 further comprising receiving at the stream
routing processor from the routing processor a fourth message comprising the reservation
data.

111. The method of claim 107 wherein the address comprises an internet
protocol address.

112. The method of claim 107 further comprising receiving the
reservation identification at an address of the stream caster and, if validated, accepting
the session at the address.

113. The method of claim 112 wherein the address is transmitted from the stream routing processor after the stream routing processor determined that the stream caster is configured to stream the requested media.

114. The method of claim 107 further comprising receiving a setup message at the stream caster and acknowledging the setup message.

115. The method of claim 107 further comprising streaming the requested media, at least partially.

116. The method of claim 115 further comprising receiving a viewing event and changing the requested media streaming accordingly.

117. The method of claim 107 further comprising using a packet switch to communicate between the stream routing processor and the stream caster.

118. The method of claim 107 further comprising using a packet switch to transmit requested media from the stream caster.

119. The method of claim 107 further comprising receiving at the stream caster in-band signaling.

120. The method of claim 107 further comprising receiving at the stream routing processor out-of-band signaling.

121. The method of claim 107 further comprising using in-band signaling to communicate with a viewer

122. The method of claim 107 further comprising using out-of-band signaling to communicate with a viewer.

123. The method of claim 107 further comprising receiving a teardown message at the stream caster and terminating the session.

124. The method of claim 107 further comprising transmitting at least one signaling log from the stream caster, the signaling log comprising the reservation identification.

125. The method of claim 124 wherein the signaling log comprises at least one member of a group comprising setup data, termination data, and a viewing event.

126. The method of claim 107 further comprising transmitting at least one information block from the stream routing processor, the information block comprising the reservation identification.

127. The method of claim 126 wherein the information block comprises at least one member of a group comprising setup data, termination data, a viewing event, a media server identification, and an identification of streamed media.

128. The method of claim 107 further comprising transmitting a plurality of information blocks from the stream routing processor, the information blocks each comprising the reservation identification.

129. The method of claim 128 further comprising transmitting the information block at the occurrence of at least one member of a group comprising setup, termination, a viewing event, a configurable period of time.

130. A method for streaming media from a switch comprising:
receiving at a stream caster reservation data comprising a valid reservation
identification; and
terminating an attempted session to stream requested media upon
5 receiving and invalidating a reservation identification using the valid
reservation identification.

131. The method of claim 130 further notifying a stream routing
processor that the stream caster received an invalid reservation identification and that the
attempted session was terminated.

132. A method for streaming requested media from a switch comprising:
receiving signaling inquiring if the switch is configured to stream the
requested media;
determining if the switch is configured to stream the requested media, and,
5 if so, acknowledging the inquiry;
receiving reservation data comprising a valid reservation identification;
receiving a reservation identification;
validating the reservation identification using the valid reservation data,
and, if validated, streaming at least partially the requested media.

133. A method for streaming media to a viewer comprising:
determining if a streaming device is configured to stream requested media,
and, if so, receiving reservation data comprising a valid reservation
identification and transmitting the valid reservation identification;
5
and
accepting a session from the viewer at the streaming device to stream at
least partially the requested media upon receiving and validating a
reservation identification using the valid reservation identification.

134. A method for streaming media from a switch comprising:

determining at a stream routing processor if a streaming device is

configured to stream requested media;

receiving reservation data comprising a valid reservation identification and

5 transmitting the valid reservation identification to the streaming

device;

accepting a session to stream at least partially the requested media upon

receiving and validating a reservation identification using the valid

reservation identification; and

10 monitoring the streaming device and notifying the stream routing

processor of a status of the streaming device.

135. A method for streaming requested media to a viewer comprising:
accepting a session based on validating a reservation identification
received from the viewer;
streaming the requested media from the media server;
proxying media streamed from the media server to the viewer; and
proxying signaling between the viewer and the media server if the session
is accepted.

136. A method for streaming requested media comprising:
determining if at least one stream caster is configured to stream the
requested media;
receiving reservation data comprising a valid reservation identification;
5 validating a reservation identification using the valid reservation
identification; and
accepting a plurality of parallel sessions to simultaneously stream at least
partially the requested media.

137. A method for streaming requested media from a switch comprising:
determining if a plurality of stream casters are configured to stream at
least a portion of the requested media;
receiving reservation data comprising a valid reservation identification;
5 validating a reservation identification using the valid reservation
identification; and
streaming simultaneously in a plurality of parallel sessions at least
partially the portion of the requested media.

138. A method for streaming requested media comprising:
determining if at least one stream caster is configured to stream the
requested media;
receiving reservation data comprising a valid reservation identification;
5 validating a reservation identification using the valid reservation
identification; and
streaming simultaneously in a plurality of parallel sessions at least
partially a portion of the requested media.

139. The method of claim 138 further comprising streaming
simultaneously in the plurality of parallel sessions at least partially the portion of the
requested media from one stream caster.

140. The method of claim 138 further comprising streaming
simultaneously in the plurality of parallel sessions at least partially the portion of the
requested media from a plurality of stream casters.